# Unplanned Return Visits to a Pediatric Emergency Department

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Abstract: OBJECTIVES: Unplanned return visits (URVs) to emergency departments (EDs) account internationally for 2.5% to 5.2% of all consultations. ED crowding is an increasing challenge, and URVs seem to contribute to this problem. This study aimed to assess factors for URVs at the ED of a tertiary children's hospital to analyze if they are jointly responsible for the steadily rising amount of treated patients. METHODS: All patients with an URV to a pediatric ED in Switzerland between January and December 2013 were included in the study. Data were taken retrospectively from the electronic patient files, and different variables were defined and analyzed. RESULTS: URVs occurred at an incidence of 4.6%, and mostly concerned infants and toddlers (46%). URVs were independent of weekdays and mostly occurred between 10 AM and 10 PM. In 84.2% of the cases, the URVs were judged as unnecessary, and in 15.8%, a hospitalization was indicated, mainly for children with a worsening respiratory illness. CONCLUSIONS: The occurrence of URVs in our ED was within the incidence reported in the literature. While URVs lead to hospitalization in some patients, the majority of URVs were unnecessary from a medical point of view. These results indicate that a correct evaluation of the child's health state by parents is often challenging and requires repeated medical attendance following a first ED visit, especially in infants with airway diseases and infections. Intensive counseling and scheduled short-term follow-up consultation at the pediatrician's office could prevent URVs to the ED.

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# Unplanned Return Visits to a Pediatric Emergency Department

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**Conclusions:** The occurrence of URVs in our ED was within the incidence reported in the literature. While URVs lead to hospitalization in some patients, the majority of URVs were unnecessary from a medical point of view. These results indicate that a correct evaluation of the child's health state by parents is often challenging and requires repeated medical attendance following a first ED visit, especially in infants with airway diseases and infections. Intensive counseling and scheduled short-term follow-up consultation at the pediatrician's office could prevent URVs to the ED.

**Key Words:** crowding, return visits, revisits

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Pediatric emergency departments (EDs) are facing an increasing number of patients treated annually. This phenomenon requires continuous reorganization processes in order to minimize crowding.[1–3] To reduce unnecessary ED visits at our institution, a telephone helpline was implemented, as well as handouts for parents are routinely yielded before discharge. Nevertheless, the number of ED consultation visits rises steadily from 30,800 treated children in 2010 to 44,252 in 2016.

Unplanned return visits (URVs) to a pediatric ED are a well-known issue and occur at an incidence of 2.5% to 5.2%.[4–8] A correlation between URVs and an ED's quality of work was discussed in multiple studies, suggesting that a high URV rate may be related to an improper first treatment.[9–12] However, Cheng et al[13] showed that the admission rate of URVs seems to be a better parameter for quality control than the incidence of URVs.

URVs can be illness related, physician related, parent related, or organization related.[1] Illness-related URVs are due to the unpreventable progression of the disease with the need of a medical intervention. Physician-related URVs result from misdiagnosis, inappropriate treatment, or insufficient parent education at discharge. Parent-related URVs are mainly due to parental concern or preference of an ED revisit rather than an appointment at the pediatrician's office. Organization-related URVs are related to the nonstop opening-hour service and no need for an appointment at the ED.

The aim of this study was to assess factors associated with URVs occurring at the ED of a tertiary university children's hospital in Switzerland.

## METHODS

### Patient Population

Patients 0 to 18 years old who had an URV at our ED between January and December 2013 were included in this retrospective, single-center cohort study. Only children with URVs due to the same clinical problem of the previous visit were considered eligible. Patients visiting the ED following hospital discharge, with a planned reattendance visit, or who did not give the consent to using the patient's data were excluded from the study. The study was approved by the local ethics board.

### Data Collection

Clinical records of all included patients were retrospectively reviewed, and the following data were collected: sex, age, nationality, number of revisits, time point and triage category of primary visit, time point and triage category of URV, reason for URV, further diagnostic tests during the revisit (blood examination, radiological imaging), consultation with specialists at the revisit, change in diagnosis, and procedure after URV (discharge, hospitalization, operation). The triage system used at our ED is the Australasian Triage Scale including 5 scores, whereas score 1 reflects the most urgent, and 5, the less urgent priority.[14]

### Statistical Analysis

Data are described as frequencies or means with SDs as appropriate. The incidence of URV was calculated using the total number of patients visiting the ED of the University Children's Hospital Zurich from January to December 2013. Diseases and symptoms were summarized in 4 categories:

(1) airway diseases: bronchitis with or without obstruction, bronchiolitis, pneumonia, rhinitis
(2) infections: fever without source, gastroenteritis, urinary tract infections, otitis, infections of bone, joint, or soft tissue
(3) trauma: concussion, fracture, burn, laceration, wound control, ankle distortion, cast problems
(4) miscellaneous: vomiting, abdominal pain, rash, headache, vertigo, swollen lymph nodes, reduced fluid intake

The time of visit was defined as the time of registration in the ED. Winter half year was defined from December until

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**TABLE 1.** Management After URVs

| | Management After URV | | |
|---|---|---|---|
| | **Discharge** | **Hospitalization** | **Total** |
| Airway diseases | 448 | 102 | 550 |
| Infections | 414 | 70 | 484 |
| Trauma | 314 | 17 | 331 |
| Miscellaneous | 240 | 77 | 317 |
| Total | 1416 (84.2%) | 266 (15.8%) | 1682 (100%) |

May. Statistical analyses were performed with the IBM SPSS statistics version 22 (IBM, Armonk, NY).

## RESULTS

During the 12-month-study period, a total of 36,618 patients were admitted to the ED of our institution. Of these, 7360 patients (20%) had returned at least one time to the ED for any reason. From these 7360 patients, 1682 (23%) met the inclusion criteria for URV and were included in the study. Of these, 1488 patients (88.5%) had 1 URV, and 194 patients (11.5%) had 2 or more URVs. The incidence of URV calculated from all visits was 4.6%. Among the 1682 URV patients, 773 (46%) were aged 0 to 2 years, 668 (39.7%) were aged 3 to 10 years, and 241 (14.3%) were aged 11 to 18 years. Overall, the mean age of patients with URVs was 4.7 ± 4.4 years.

Diseases leading to URVs were infections in 484 patients (28.8%), airway diseases in 550 patients (32.7%), traumas in 331 patients (19.7%), and miscellaneous in 317 patients (18.8%). Following URV, 1416 (84.2%) were discharged home, and 266 (15.8%) were hospitalized, mainly due to worsening of a respiratory illness (Table 1).

Causes for URVs included persisting or worsening symptoms in 1642 (97.6%) and misdiagnosis in 40 (2.4%) patients. Of these 40 patients, 12 (30%) required hospitalization, and 9 (22.5%) required surgery. Two of the 12 hospitalized patients required intensive care treatment due to life-threatening pneumococcal sepsis. One patient was an immune-compromised teenager after kidney transplantation, and the other patient was a previously healthy 8-year-old girl who was diagnosed with gastroenteritis on her first ED visit 4 days prior to her URV. Indications for surgery were appendicitis in 5 and abscess drainage, incarcerated inguinal hernia, urinary retention, and tooth fracture in each 1 patient. Drop of more than 2 triage levels in the Australasian Triage Scale occurred in 57 patients (3.4%). Further diagnostic tests such as blood examination was performed in 373 patients (22.2%) and radiological imaging in 191 patients (11.4%), or consultations with specialists were required in 148 patients (8.8%).

The time interval from the first ED presentation to the URV occurred within 24 hours in 437 patients (26%) and within 72 hours in 1205 patients (71.6%) (Fig. 1). URVs were uniformly distributed during the week and occurred between 10 AM and 10 PM in 1350 (80.3%) of cases (Figs. 2A, B). Nine hundred eighty-six patients (58.6%) accounted for URVs during the winter months (December to May) (Fig. 3).

## DISCUSSION

The present study aimed to assess factors associated with URVs occurring at the ED of a tertiary children's hospital.

The increasing rate of ED consultations is an emerging, global phenomenon. In this context, a high rate of URVs to the ED may not only contribute to crowding but also reflect poor quality of care. Recent data have shown that a 1% to 5% URV threshold is realistic and achievable and can drive improvement in children's services.[7] The overall URV rate of 4.6% in our study is in line with this threshold. By contrast, the rate of repeated URV of 11.5% was increased compared with previous published rates ranging from 5.5% to 7.8%.[4,5] The rate of hospitalization of 15.8%, however, was lower as compared with reported rate of 17% to 42%.[6,15] Several findings from our study may account

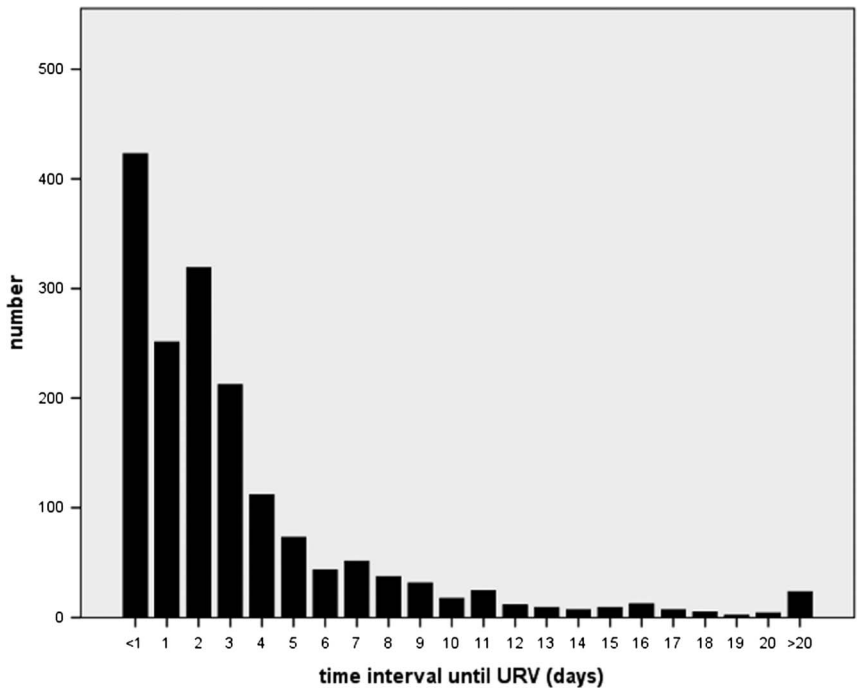


**FIGURE 1.** Time interval between first visit at ED and URV.

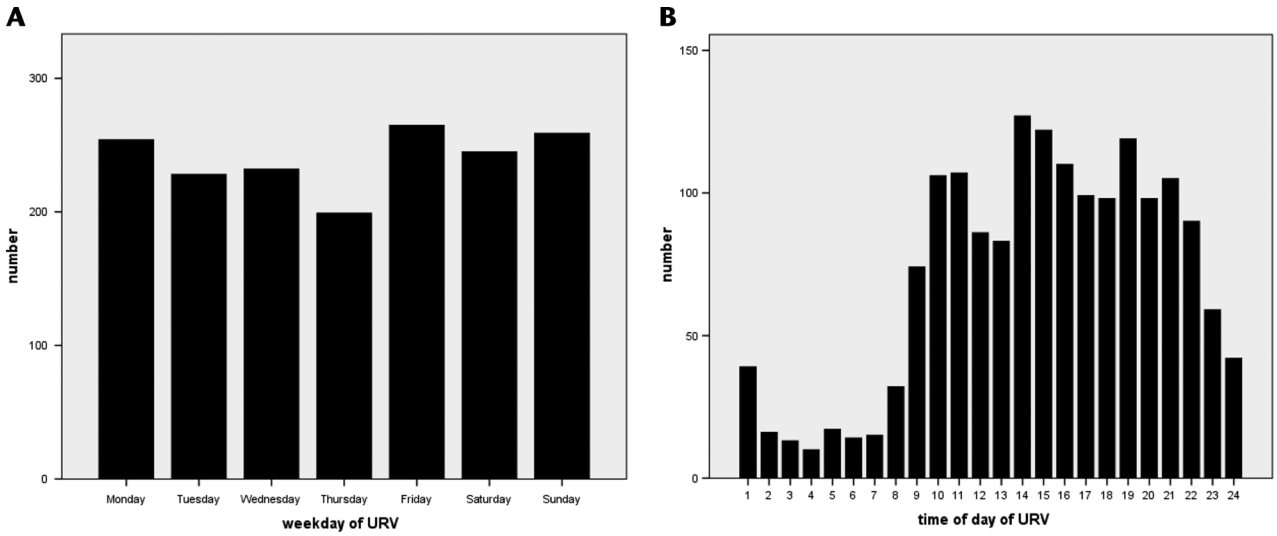


**FIGURE 2.** A, Distribution of URV during the week. B, Time distribution of URV.

for these contrasting results. Repeated URVs did not lead to additional laboratory or radiologic investigations. Trivial infections and airway diseases were the most common causes of URVs, predominantly occurring in infants and toddlers. This group of children was also responsible for most of the repeated URVs. All these findings suggest that less experienced and anxious parents might be overstrained to correctly evaluate their child's health state.[4,5,16,17] For this specific age group, a more accurate, focused, and intensive counseling at the first visit may improve confidence of parents and reduce URVs.

In this study, URVs due to misdiagnosis at first attendance occurred at an incidence of 2.4% and were associated with hospitalization or surgery in 50% of cases. A misdiagnosis rate up to 14% has been reported in the literature.[7] Having the potential of increasing morbidity and mortality, misdiagnoses are one of the most important causes justifying acceptance and careful evaluation of every URV.

The majority of URVs in our cohort took place within 3 days of first visit during weekdays and office hours. This finding is in line with results of recent studies, suggesting that parents prefer a walk-in clinic instead of an appointment at the pediatrician's office.[17–19] Possible reasons for this preference include difficulties in scheduling same-day appointment with the own pediatrician, lack of pediatricians and general practitioners, proximity to the hospital, desire for more evaluation and treatment, availability of specialists, and more investigation and treatment facilities in the hospital. These reasons strongly depend on the local medical system and may vary in the different countries. Further investigations

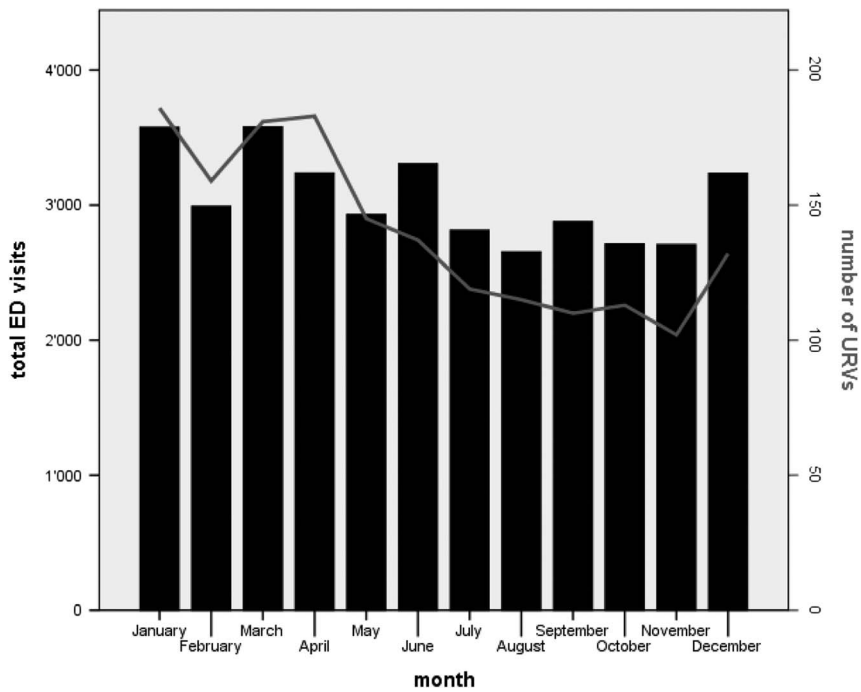


**FIGURE 3.** Distribution of URV during the year (bars) and ratio between URV per months and total ED visits per month (gray line).

are required to access whether URVs at our institution are solely due to the central location and easy accessibility of our ED or if structural deficits in the pediatric primary care system are present.

The major limitation of this study is its retrospective and monocentric nature, which limits interpretation and generalization of results. Other potential limitations include lack of data regarding language barriers between parents and medical stuff and the true reasons for URVs from the patients' or parents' point of view.

In conclusion, this study indicates that a correct evaluation of the infant's and toddler's health state by parents is often challenging and requires repeated medical attendance following a first ED visit. Intensive counseling with precise verbal and written discharge information and scheduled short-term follow-up consultation at the pediatrician's office could prevent URVs to the ED, especially for young children with infections and airway diseases.

## REFERENCES


1. Cho C, Shapiro DJ, Cabana MD, et al. A national depiction of children with return visits to the emergency department within 72 hours, 2001–2007. *Pediatr Emerg Care*. 2012;28:606–610.
2. Akinsola B, Cheng J, Zmitrovich A, et al. Improving discharge instructions in a pediatric emergency department: impact of a quality initiative. *Pediatr Emerg Care*. 2017;33:10–13.
3. Gallagher RA, Porter S, Monuteaux MC, et al. Unscheduled return visits to the emergency department. *Pediatr Emerg Care*. 2013;29: 579–583.
4. Alessandrini EA, Lavelle JM, Grenfell SM, et al. Return visits to a pediatric emergency department. *Pediatr Emerg Care*. 2004;20:166–171.
5. Goldman RD, Ong M, Macpherson A. Unscheduled return visits to the pediatric emergency department—one-year experience. *Pediatr Emerg Care*. 2006;22:545–549.
6. Goldman RD, Kapoor A, Mehta S. Children admitted to the hospital after returning to the emergency department within 72 hours. *Pediatr Emerg Care*. 2011;27:808–811.
7. O'Loughlin K, Hacking KA, Simmons N, et al. Paediatric unplanned reattendance rate: A&E clinical quality indicators. *Arch Dis Child*. 2013; 98:211–213.
8. Jeong JH, Hwang SS, Kim K, et al. Implementation of clinical practices to reduce return visits within 72 h to a paediatric emergency department. *Emerg Med J*. 2015;32:426–432.
9. Costabel S, Piccotti E, Sartini M, et al. Return visits to the paediatric emergency department: first analysis in Italy. *J Prev Med Hyg*. 2008;49: 142–147.
10. Di Giuseppe G, Abbate R, Albano L, et al. Characteristics of patients returning to emergency departments in Naples, Italy. *BMC Health Serv Res*. 2008;8:97.
11. American Academy of Pediatrics; Committee on Pediatric Emergency Medicine; American College of Emergency Physicians; Pediatric Committee; Emergency Nurses Association Pediatric Committee. Joint policy statement—guidelines for care of children in the emergency department. *Pediatrics*. 2009;124:1233–1243.
12. Easter JS, Bachur R. Physicians' assessment of pediatric returns to the emergency department. *J Emerg Med*. 2013;44:682–688.
13. Cheng J, Shroff A, Khan N, et al. Emergency department return visits resulting in admission: do they reflect quality of care? *Am J Med Qual*. 2016;31:541–551.
14. Australasian College for Emergency Medicine. *A National Triage Scale for Australian Emergency Departments (Position Paper)*. Melbourne, Victoria, Australia: Australasian College for Emergency Medicine; 1993.
15. Goh G, Huang P, Kong MC, et al. Unplanned reattendances at the paediatric emergency department within 72 hours: a one-year experience in KKH. *Singapore Med J*. 2016;57:307–313.
16. Bergese I, Frigerio S, Clari M, et al. An innovative model to predict pediatric emergency department return visits. *Pediatr Emerg Care*. 2016; ahead of print.
17. Augustine EM, Kreling BA, Chamberlain JM. Caretakers' perspectives on return pediatric emergency department visits: a qualitative analysis of focus groups. *Pediatr Emerg Care*. 2016;32:594–598.
18. Ali AB, Place R, Howell J, et al. Early pediatric emergency department return visits: a prospective patient-centric assessment. *Clin Pediatr (Phila)*. 2012;51:651–658.
19. Rogers BD, Attia MW. Comparison of primary care provider office hours and pediatric emergency department return visits. *Pediatr Emerg Care*. 2017;33:480–485.